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**D407-667-205TRN**  
**Job Sheet 192357**



**Part No:** D407-667-205TRN

**Job Qty:** 1 pcs

**Part Name:** Crosstube Turning Detail



**Part Weight:** 0 lbs

**Status:** New

**Priority:** Medium

**Job Created:** 3/21/19

**Job Tracking No:**

**Due Date:** 4/18/19

**Created By:** Marie Lajeunesse

**Type:** Stock

**Description:**

**Note:** DWG REV G IPP Rev:A 08-03-06 new issue DD verified by:ec IPP Rev B 08.04.02 Removed polish EC verified by: DD IPP Rev:C 08-08-19 revE as per dwg DD verified by:EC

**Ship Via:**

### Bill of Materials

### Job Routing

| Op No | Operation            | Qty   | Start Date | Due Date | Standard  |         | Workcenter/Supplier   |  | Lead Time | DAS Sign-off                 |
|-------|----------------------|-------|------------|----------|-----------|---------|-----------------------|--|-----------|------------------------------|
|       |                      |       |            |          | Setup Hrs | Run Hrs | Workcenter / Supplier |  |           |                              |
| 100   | Mori Seiki TL-40 - 1 | 1 pcs | 4/18/19    | 4/18/19  | 2.49      | 3.20    | Mori Seiki TL-40 - 1  |  |           | 66 2019-04-11<br>9-89        |
| 110   | QC 2                 | 1 pcs | 4/18/19    | 4/18/19  | 0.00      | 0.00    | QC 2 - 1              |  |           |                              |
|       |                      |       |            |          |           |         | QC 2 - 12             |  |           |                              |
|       |                      |       |            |          |           |         | QC 2 - 14             |  |           |                              |
|       |                      |       |            |          |           |         | QC 2 - 17             |  |           |                              |
|       |                      |       |            |          |           |         | QC 2 - 19             |  |           |                              |
|       |                      |       |            |          |           |         | QC 2 - 2              |  |           |                              |
|       |                      |       |            |          |           |         | QC 2 - 20             |  |           |                              |
|       |                      |       |            |          |           |         | QC 2 - 22             |  |           |                              |
|       |                      |       |            |          |           |         | QC 2 - 23             |  |           |                              |
|       |                      |       |            |          |           |         | QC 2 - 25             |  |           |                              |
|       |                      |       |            |          |           |         | QC 2 - 32             |  |           |                              |
|       |                      |       |            |          |           |         | QC 2 - 33             |  |           |                              |
|       |                      |       |            |          |           |         | QC 2 - 35             |  |           |                              |
|       |                      |       |            |          |           |         | QC 2 - 39             |  |           |                              |
|       |                      |       |            |          |           |         | QC 2 - 4              |  |           |                              |
|       |                      |       |            |          |           |         | QC 2 - 40             |  |           |                              |
|       |                      |       |            |          |           |         | QC 2 - 44             |  |           |                              |
|       |                      |       |            |          |           |         | QC 2 - 45             |  |           |                              |
|       |                      |       |            |          |           |         | QC 2 - 48             |  |           |                              |
|       |                      |       |            |          |           |         | QC 2 - 49             |  |           |                              |
|       |                      |       |            |          |           |         | QC 2 - 50             |  |           |                              |
|       |                      |       |            |          |           |         | QC 2 - 51             |  |           |                              |
|       |                      |       |            |          |           |         | QC 2 - 52             |  |           |                              |
|       |                      |       |            |          |           |         | QC 2 - 56             |  |           |                              |
|       |                      |       |            |          |           |         | QC 2 - 57             |  |           |                              |
|       |                      |       |            |          |           |         | QC 2 - 62             |  |           |                              |
|       |                      |       |            |          |           |         | QC 2 - 63             |  |           |                              |
|       |                      |       |            |          |           |         | QC 2 - 8              |  |           | DAS<br>66 2019-04-11<br>0-80 |
|       |                      |       |            |          |           |         | QC 2 - 66             |  |           |                              |

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|     |                            |       |         |           |                            |               |
|-----|----------------------------|-------|---------|-----------|----------------------------|---------------|
|     |                            |       |         |           | QC 2 - 64                  |               |
|     |                            |       |         |           | QC 2 - 65                  |               |
|     |                            |       |         |           | QC 2 - 5                   | DAS           |
| 120 | Mori Seiki TL-40 - 1 - B4B | 1 pcs | 4/18/19 | 0.00 0.00 | Mori Seiki TL-40 - 1 - B4B | 66 2019-04-15 |
| 130 | QC 2                       | 1 pcs | 4/18/19 | 0.00 0.00 | QC 2 - 1                   | 9-89          |
|     |                            |       |         |           | QC 2 - 12                  |               |
|     |                            |       |         |           | QC 2 - 14                  |               |
|     |                            |       |         |           | QC 2 - 17                  |               |
|     |                            |       |         |           | QC 2 - 19                  |               |
|     |                            |       |         |           | QC 2 - 2                   |               |
|     |                            |       |         |           | QC 2 - 20                  |               |
|     |                            |       |         |           | QC 2 - 22                  |               |
|     |                            |       |         |           | QC 2 - 23                  |               |
|     |                            |       |         |           | QC 2 - 25                  |               |
|     |                            |       |         |           | QC 2 - 32                  |               |
|     |                            |       |         |           | QC 2 - 33                  |               |
|     |                            |       |         |           | QC 2 - 35                  |               |
|     |                            |       |         |           | QC 2 - 39                  |               |
|     |                            |       |         |           | QC 2 - 4                   |               |
|     |                            |       |         |           | QC 2 - 40                  |               |
|     |                            |       |         |           | QC 2 - 44                  |               |
|     |                            |       |         |           | QC 2 - 45                  |               |
|     |                            |       |         |           | QC 2 - 48                  |               |
|     |                            |       |         |           | QC 2 - 49                  |               |
|     |                            |       |         |           | QC 2 - 50                  |               |
|     |                            |       |         |           | QC 2 - 51                  |               |
|     |                            |       |         |           | QC 2 - 52                  |               |
|     |                            |       |         |           | QC 2 - 56                  |               |
|     |                            |       |         |           | QC 2 - 57                  |               |
|     |                            |       |         |           | QC 2 - 62                  |               |
|     |                            |       |         |           | QC 2 - 63                  |               |
|     |                            |       |         |           | QC 2 - 8                   | DAS           |
|     |                            |       |         |           | QC 2 - 66                  | 66 2019-04-16 |
|     |                            |       |         |           | QC 2 - 64                  | 9-89          |
|     |                            |       |         |           | QC 2 - 65                  |               |
|     |                            |       |         |           | QC 2 - 5                   |               |
| 140 | QC 8                       | 1 pcs | 4/18/19 | 0.00 0.00 | QC 8 - 12                  |               |
|     |                            |       |         |           | QC 8 - 14                  |               |
|     |                            |       |         |           | QC 8 - 17                  |               |
|     |                            |       |         |           | QC 8 - 20                  |               |
|     |                            |       |         |           | QC 8 - 25                  |               |
|     |                            |       |         |           | QC 8 - 3                   |               |
|     |                            |       |         |           | QC 8 - 32                  |               |
|     |                            |       |         |           | QC 8 - 33                  |               |
|     |                            |       |         |           | QC 8 - 35                  |               |
|     |                            |       |         |           | QC 8 - 39                  |               |
|     |                            |       |         |           | QC 8 - 4                   |               |
|     |                            |       |         |           | QC 8 - 44                  |               |
|     |                            |       |         |           | QC 8 - 45                  |               |
|     |                            |       |         |           | QC 8 - 49                  |               |
|     |                            |       |         |           | QC 8 - 58                  |               |
|     |                            |       |         |           | QC 8 - 8                   |               |
|     |                            |       |         |           | QC 8 - 9                   |               |
|     |                            |       |         |           | QC 8 - 68                  | DAS           |
|     |                            |       |         |           | QC 8 - 67                  | 67 2019-04-23 |
|     |                            |       |         |           | QC 8 - 1 (A)               | 9-89          |
|     |                            |       |         |           | QC 8 - 47                  |               |
|     |                            |       |         |           | QC 8 - 40                  |               |
|     |                            |       |         |           | QC 8 - 52                  |               |



|     |                             |       |         | QC 8 - 23 |                        |
|-----|-----------------------------|-------|---------|-----------|------------------------|
| 145 | Crosstubes - 2 - B4B        | 1 pcs | 4/18/19 | 0.00 0.65 | Crosstubes - 1 - B4B   |
|     |                             |       |         |           | Crosstubes - 2 - B4B   |
|     |                             |       |         |           | Crosstubes - 3 - B4B   |
|     |                             |       |         |           | Crosstubes - 4 - B4B   |
| 150 | Crosstubes - 3 - B4B        | 1 pcs | 4/18/19 | 0.00 0.25 | Crosstubes - 1 - B4B   |
|     |                             |       |         |           | Crosstubes - 2 - B4B   |
|     |                             |       |         |           | Crosstubes - 3 - B4B   |
|     |                             |       |         |           | Crosstubes - 4 - B4B   |
| 160 | QC 7                        | 1 pcs | 4/18/19 | 0.00 0.00 | QC 7 - 10              |
|     |                             |       |         |           | QC 7 - 13              |
|     |                             |       |         |           | QC 7 - 14              |
|     |                             |       |         |           | QC 7 - 15              |
|     |                             |       |         |           | QC 7 - 17              |
|     |                             |       |         |           | QC 7 - 18              |
|     |                             |       |         |           | QC 7 - 19              |
|     |                             |       |         |           | QC 7 - 2               |
|     |                             |       |         |           | QC 7 - 28              |
|     |                             |       |         |           | QC 7 - 3               |
|     |                             |       |         |           | QC 7 - 30              |
|     |                             |       |         |           | QC 7 - 34              |
|     |                             |       |         |           | QC 7 - 36              |
|     |                             |       |         |           | QC 7 - 37              |
|     |                             |       |         |           | QC 7 - 41              |
|     |                             |       |         |           | QC 7 - 47              |
|     |                             |       |         |           | QC 7 - 48              |
|     |                             |       |         |           | QC 7 - 51              |
|     |                             |       |         |           | QC 7 - 58              |
|     |                             |       |         |           | QC 7 - 59              |
|     |                             |       |         |           | QC 7 - 60              |
|     |                             |       |         |           | QC 7 - 9               |
|     |                             |       |         |           | QC 7 - 68              |
|     |                             |       |         |           | QC 7 - 50              |
|     |                             |       |         |           | QC 7 - 67              |
|     |                             |       |         |           | QC 7 - 40              |
| 170 | Packaging 3-1 - Stock - B4B | 1 pcs | 4/18/19 | 0.00 0.00 | Packaging 3 - 1 - B4B  |
|     |                             |       |         |           | Packaging 3 - 2 - B4B  |
|     |                             |       |         |           | Packaging 3 - 3 - B4B  |
|     |                             |       |         |           | Packaging 3 - 4 - B4B  |
|     |                             |       |         |           | Packaging 3 - 5 - B4B  |
|     |                             |       |         |           | Packaging 3 - 6 - B4B  |
|     |                             |       |         |           | Packaging 3 - 7 - B4B  |
|     |                             |       |         |           | Packaging 3 - 8 - B4B  |
|     |                             |       |         |           | Packaging 3 - 9 - B4B  |
|     |                             |       |         |           | Packaging 3 - 10 - B4B |
|     |                             |       |         |           | Packaging 3 - 11 - B4B |
|     |                             |       |         |           | Packaging 3 - 12 - B4B |
|     |                             |       |         |           | Packaging 3 - 13 - B4B |
|     |                             |       |         |           | Packaging 3 - 14 - B4B |
|     |                             |       |         |           | Packaging 3 - 15 - B4B |
|     |                             |       |         |           | Packaging 3 - 16 - B4B |
|     |                             |       |         |           | Packaging 3 - 17 - B4B |
|     |                             |       |         |           | Packaging 3 - 18 - B4B |
|     |                             |       |         |           | Packaging 3 - 19 - B4B |
|     |                             |       |         |           | Packaging 3 - 20 - B4B |
|     |                             |       |         |           | Packaging 3 - 21 - B4B |
|     |                             |       |         |           | Packaging 3 - 22 - B4B |
|     |                             |       |         |           | Packaging 3 - 23 - B4B |
|     |                             |       |         |           | Packaging 3 - 24 - B4B |

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DR 19/04/24

GP 19-04-24

|                |       |         |           |                        |  |
|----------------|-------|---------|-----------|------------------------|--|
|                |       |         |           | Packaging 3 - 25 - B4B |  |
|                |       |         |           | Packaging 3 - 26 - B4B |  |
|                |       |         |           | Packaging 3 - 27 - B4B |  |
|                |       |         |           | Packaging 3 - 28 - B4B |  |
|                |       |         |           | Packaging 3 - 29 - B4B |  |
|                |       |         |           | Packaging 3 - 30 - B4B |  |
|                |       |         |           | Packaging 3 - 31 - B4B |  |
|                |       |         |           | Packaging 3 - 32 - B4B |  |
|                |       |         |           | Packaging 3 - 33 - B4B |  |
|                |       |         |           | Packaging 3 - 34 - B4B |  |
|                |       |         |           | Packaging 3 - 35 - B4B |  |
|                |       |         |           | Packaging 3 - 36 - B4B |  |
| 180 QC 21 - SA | 1 pcs | 4/18/19 | 0.00 0.00 | QC 21 - SA - 21        |  |
|                |       |         |           | QC 21 - SA - 70        |  |
|                |       |         |           | QC 21 - SA - 53        |  |

Part Op 100 - Mori Seiki CNC Lathe Large) 1-Fill tube with sand & install plugs DT8531 on both ends as per Folio FA248 3-Turn  
 Descriptions: first side as per Folio FA248  
 110 - (QC2- Inspect parts off machine FAI/FAIB)  
 120 - (Mori Seiki CNC Lathe Large) 1-Turn second side as per Folio FA248 4-Scribe part # and batch # using vibrating stylus as per Dwg D407-667-245  
 130 - (QC2- Inspect parts off machine FAI/FAIB)  
 140 - (QC8- Inspect parts - second check)  
 145 - (Crosstubes) Grind off circumferential machining marks longitudinally.  
 150 - (Crosstubes) 1- handfinish X-TUBE INSIDE AND OUT 2- ACID ETCH X-TUBE INSIDE AND OUT. USE RED SCOTCH BRITE  
 160 - (QC7-Inspect Chemical Conversion Coat)  
 170 - Identify and stock in kanban rack  
 180 - (QC21- Final Inspection - Work Order Release)

| Job BOM     |                    |              |                          |           |
|-------------|--------------------|--------------|--------------------------|-----------|
| Part / Item | Component Name     | Quantity     | Operation                | Container |
| D6011-115   | Crosstube Material | 1 pcs (1 ea) | 100-Mori Seiki TL-40 - 1 | 5006659   |

| Job Allocations          |                |          |           |           |
|--------------------------|----------------|----------|-----------|-----------|
| Operation                | Component Part | Required | Inventory | Allocated |
| 100-Mori Seiki TL-40 - 1 | D6011-115      | 1        | 61        | 0         |

| Part Specifications                |  |
|------------------------------------|--|
| Specifications could not be found. |  |

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Container No: S171808



Part: D407-667-205TRN

Job No: 192357

Serial No/Batch: S171808

Revision: G

Inspector:

Exp Date:

Instructions:

Dart Aerospace Ltd.  
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 Email: sales@dartaero.com  
 www.dartaerospace.com

Date: 04/11/19



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|---------------------------------------------------|---------------------|--------------------|
| <b>DART AEROSPACE LTD</b>                         | <b>Work Order:</b>  | 19235X             |
| <b>Description:</b> Crosstube Assembly            | <b>Part Number:</b> | D407-667-245       |
| <b>Inspection Dwg:</b> D407-667-245 <b>Rev:</b> G |                     | <b>Page 1 of 2</b> |

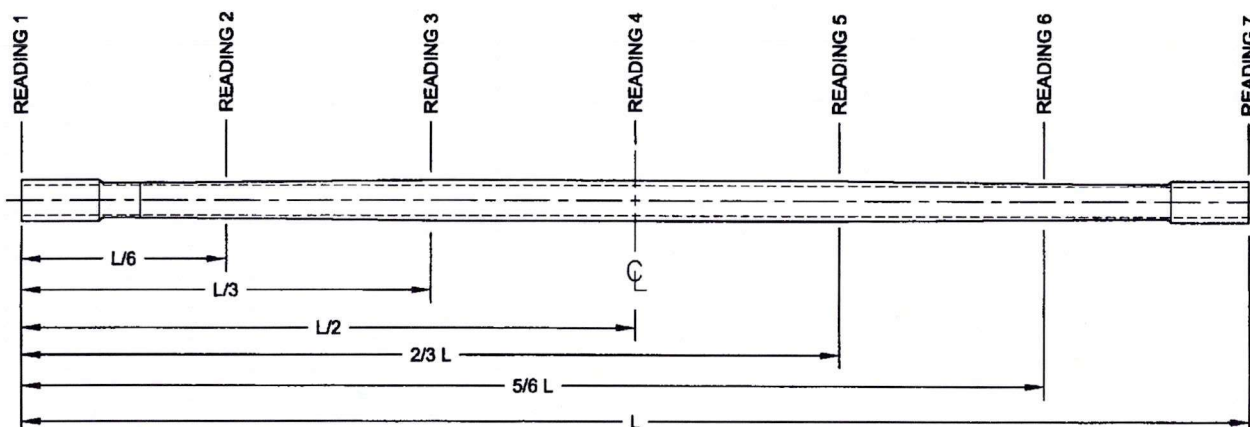
### FIRST ARTICLE INSPECTION CHECKLIST

|        | Inspection Sheet<br>Drawing Dimension | Tolerance     | Actual<br>Dimension | Accept | Reject | Method of<br>Inspection | Comments |
|--------|---------------------------------------|---------------|---------------------|--------|--------|-------------------------|----------|
| SIDE A | 2.490                                 | +0.005/-0.000 | 2.492               | ✓      |        | CNC-04                  |          |
|        | 1.832                                 | +0.005/-0.000 | 1.835               | ✓      |        | CNC-08                  |          |
|        | 1.838                                 | +0.005/-0.000 | 1.843               | ✓      |        | "                       |          |
|        | 1.892                                 | +0.005/-0.000 | 1.896               | ✓      |        | "                       |          |
|        | 2.052                                 | +0.005/-0.000 | 2.056               | ✓      |        | CNC-04                  |          |
|        | 2.206                                 | +0.005/-0.000 | 2.211               | ✓      |        | ↓                       |          |
|        | 2.521                                 | +0.005/-0.000 | 2.526               | ✓      |        | ↓                       |          |
|        | 2.633                                 | +0.005/-0.000 | 2.638               | ✓      |        | ↓                       |          |
|        | 4.10                                  | +/-0.030      | 4.10                | ✓      |        | CNC-08                  |          |
|        | 4.978                                 | +/-0.030      | 4.983               | ✓      |        | ↓                       |          |
|        | 2.040                                 | +0.000/-0.010 | 2.040               | ✓      |        | ↓                       |          |
|        | 0.125                                 | +/-0.010      | .120                | ✓      |        | ↓                       |          |
|        | R0.063                                | +/-0.010      | .063                | ✓      |        | RG                      |          |
|        | R0.500                                | +/-0.010      | .500                | ✓      |        | "                       |          |
| SIDE B | 2.490                                 | +0.005/-0.000 | 2.494               | ✓      |        | CNC-04                  |          |
|        | 1.832                                 | +0.005/-0.000 | 1.837               | ✓      |        | CNC-08                  |          |
|        | 1.838                                 | +0.005/-0.000 | 1.843               | ✓      |        | "                       |          |
|        | 1.892                                 | +0.005/-0.000 | 1.897               | ✓      |        | "                       |          |
|        | 2.052                                 | +0.005/-0.000 | 2.057               | ✓      |        | CNC-04                  |          |
|        | 2.206                                 | +0.005/-0.000 | 2.211               | ✓      |        | ↓                       |          |
|        | 2.521                                 | +0.005/-0.000 | 2.526               | ✓      |        | ↓                       |          |
|        | 2.633                                 | +0.005/-0.000 | 2.638               | ✓      |        | ↓                       |          |
|        | 4.10                                  | +/-0.030      | 4.10                | ✓      |        | CNC-08                  |          |
|        | 4.978                                 | +/-0.030      | 4.980               | ✓      |        | "                       |          |
|        | 2.040                                 | +0.000/-0.010 | 2.040               | ✓      |        | "                       |          |
|        | 0.125                                 | +/-0.010      | .125                | ✓      |        | "                       |          |
|        | R0.063                                | +/-0.010      | .063                | ✓      |        | RG                      |          |
|        | R0.500                                | +/-0.010      | .500                | ✓      |        | "                       |          |
|        | 112.91                                | +/-0.020      | 112.900             | ✓      |        | tape                    |          |

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|--------------------------------------------|----------------------------------|
| <b>DART AEROSPACE LTD</b>                  | <b>Work Order:</b> 192358        |
| <b>Description:</b> Crosstube Assembly     | <b>Part Number:</b> D407-667-245 |
| <b>Inspection Dwg:</b> D407-667-245 Rev: G | <b>Page 2 of 2</b>               |

### WALL THICKNESS MEASUREMENT



| Location               | WALL THICKNESS MEASUREMENT (IN) |      |      |      | Deviation<br>$\Delta w$<br>(max-min) | TOLERANCE |
|------------------------|---------------------------------|------|------|------|--------------------------------------|-----------|
|                        | w1                              | w2   | w3   | w4   |                                      |           |
| READING 1<br>L= 0"     | .221                            | .222 | .225 | .223 | .004                                 | 0.075"    |
| READING 2<br>L= 18.82  | .233                            | .246 | .241 | .227 | .019                                 |           |
| READING 3<br>L= 37.64  | .425                            | .427 | .397 | .387 | .040                                 |           |
| READING 4<br>L= 56.46  | .654                            | .662 | .646 | .638 | .024                                 |           |
| READING 5<br>L= 75.27  | .395                            | .408 | .417 | .402 | .022                                 |           |
| READING 6<br>L= 94.09  | .235                            | .241 | .242 | .235 | .007                                 |           |
| READING 7<br>L= 112.91 | .222                            | .223 | .223 | .224 | .002                                 |           |

#### Calibration Result

Actual Block Thickness: 100-750

Sitescan 250 Measured Thickness: 100-750

|                                                       |                                                    |                                              |
|-------------------------------------------------------|----------------------------------------------------|----------------------------------------------|
| <b>Measured by:</b> DAS 66<br><b>Date:</b> 2019-04-16 | <b>Audited by:</b> DAS 67<br><b>Date:</b> 19-04-23 | <b>Preliminary Approval:</b><br><b>Date:</b> |
|-------------------------------------------------------|----------------------------------------------------|----------------------------------------------|

| Rev | Date     | Change                                | Revised by | Approved |
|-----|----------|---------------------------------------|------------|----------|
| A   | 04.04.21 | New Issue (P/O D407-667-205)          | KJ/RF      |          |
| B   | 06.03.09 | Dwg Rev updated                       | KJ/JLM     |          |
| C   | 06.03.30 | Tolerance revised for 4.978 dimension | KJ/JLM     |          |
| D   | 07.02.19 | Dwg Rev updated                       | KJ/JLM     |          |
| E   | 09.05.20 | Dwg Rev updated                       | KJ         |          |
| F   | 12.06.04 | Wall thickness form added             | KJ         |          |
| G   | 15.05.14 | Dwg Rev updated                       | KJ         |          |



| Item | QTY<br>-245 | PART NUMBER       | DESCRIPTION                       |
|------|-------------|-------------------|-----------------------------------|
|      | X           | D407-667-245      | CROSSTUBE ASSEMBLY (407 HIGH AFT) |
| 1    | 1           | D6011-115         | CROSSTUBE                         |
| 2    | 2           | D2873-043         | NUT PLATE                         |
| 3    | 2           | D2873-045         | NUT PLATE                         |
| 4    | 1           | D2894-1           | SUPPORT                           |
| 5    | 2           | D3190-1           | CHAFING SHIELD                    |
| 6    | 2           | D3595-063-430     | RUBBER CUSHION                    |
| 7    | 14          | MS20601AD4W8      | RIVET (OR NAS9302B-4-8)           |
| 8    | 4           | MS21920-22        | CLAMP                             |
| 9    | 2           | MS21920-25        | CLAMP (OR MS21920-24)             |
| 10   | AR          | SCOTCH-WELD DP460 | EPOXY ADHESIVE, 3M SCOTCH-WELD    |
| 11   | AR          | PROSEAL 890       | SEALANT                           |

#### GENERAL NOTES:

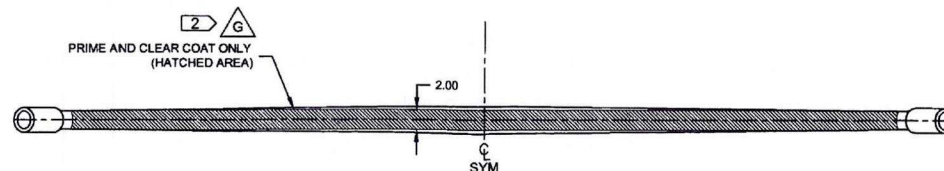
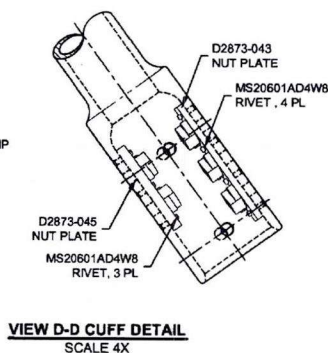
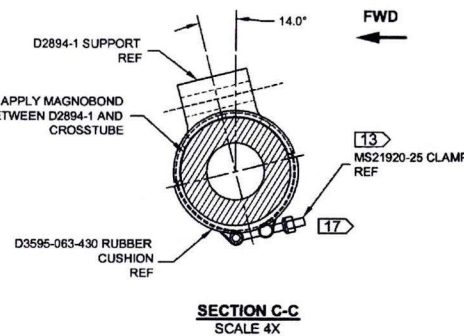
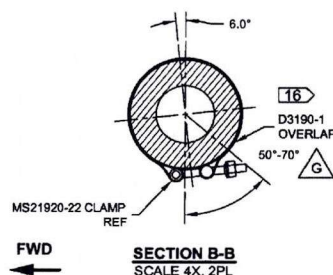
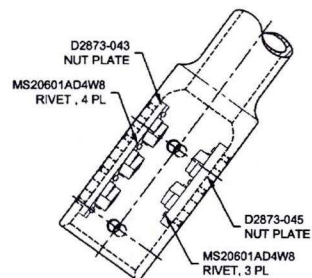
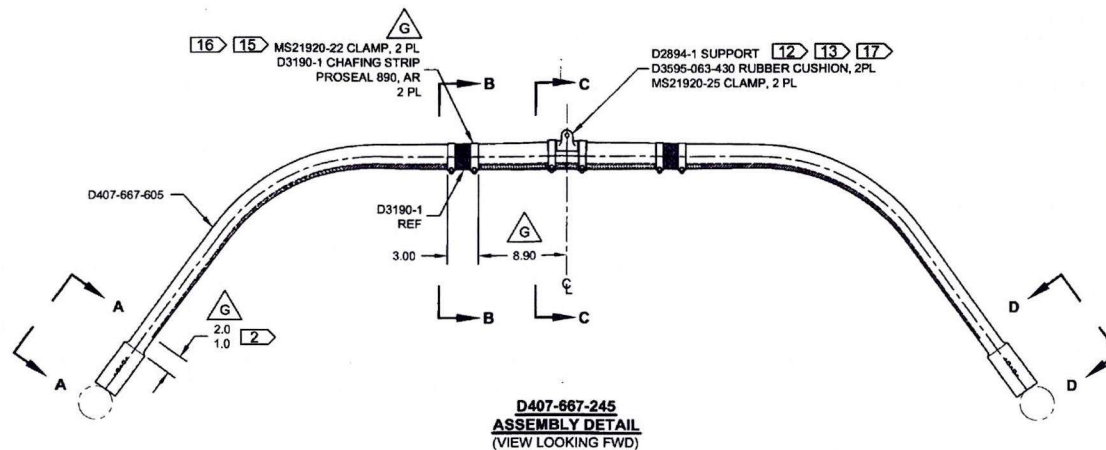
- MATERIAL: MANUFACTURED FROM D6011-115  
FINISHED LENGTH = 112.91±0.020
- FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT CROSSTUBE PER DART QSI 005 4.2  
FOR HATCHED AREAS (ZN A6-2), MASK AS REQUIRED  
TO APPLY PRIME AND APPLY CLEAR COAT ONLY
- TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- UNITS: INCHES UNLESS OTHERWISE NOTED.
- BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- IDENTIFICATION: SCRIBE DART PART NUMBER "D407-667-245" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- WEIGHT: 27.7 lbs
- PART IS SYMMETRIC ABOUT CENTERLINE.
- RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY. TRANSITION SHOULD BE SMOOTH.
- BEND PROGRESSIVELY WITH A MINIMUM OF 6 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- INSTALL D2894-1 CENTER SUPPORT USING A 0.04" TO 0.07" THICK LAYER OF SCOTCH-WELD DP460 PER QSI 015. LET CURE FOR 24 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- INSTALL MS21920-25 CLAMPS WITH D3595-063-430 RUBBER CUSHIONS TO SECURE D2894-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE CROSSTUBE SUPPORT.  
NOTE: MS21920-24 CLAMPS CAN BE USED TO ACCOMMODATE VARYING DIAMETERS. ENSURE THERE IS A MINIMUM OF 1.5 THREADS IN SAFETY ON THE NUTS.
- EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- APPLY A THIN COAT OF PROSEAL 890 ON INSIDE CONCAVE SURFACE OF D3190-1 CHAFING SHIELDS AND LET CURE PER MANUFACTURER'S INSTRUCTIONS. INSTALL PROSEAL D3190-1 CHAFING SHIELDS ONTO CROSSTUBE BY APPLYING A THIN COAT OF PROSEAL 890 ONTO CROSSTUBE. BE SURE TO ELIMINATE ANY AIR GAPS.
- INSTALL D3190-1 CHAFING SHIELDS SO THAT OVERLAP IS 50 TO 70 DEGREES FROM BOTTOM OF CROSSTUBE OPPOSITE D2894-1 SUPPORT.
- TORQUE CLAMPS 80 TO 100 IN-LB. TORQUE CLAMPS ON D3190-1 CHAFING SHIELD 40 TO 50 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER ADHESIVE HAS CURED FOR 24 HOURS.

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WORK ORDER  
NO. 192357 MCL  
1903-21

|            |                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                        |              |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| G          | INCORP. DEO'S D407-667-245-F1-F2 (ZN D8-1, A8-1, D5-2, B6-2, C6-2); 8.90 WAS 8.53 (ZN D5-2); TORQUE REDUCED FOR CHAFING SHIELD (ZN A8-1); FINISH REVISED TO ALLOW MANUFAC. FLEXIBILITY (ZN C8-1)                                      | RF                                                                                                                                                                                                                                                                                     | 15.03.20     |
| F          | REFORMAT NOTES TO NEW STANDARDS (ZN B8-1); RELOCATED FLAG # 6 (ZN A8-3) PER NCR 210; REMOVED REF. & ADD TOLERANCES (ZN C6-3, C4-3 & D2-3)                                                                                             | RF                                                                                                                                                                                                                                                                                     | 08.11.06     |
| E          | 8.02 AND 8.53 WERE 8.40 AND 8.90 (ZN D5-2); REORGANIZED VIEWS AND REFORMATED DRAWING TO CURRENT STANDARDS.<br>REASONS: CLAMPS MOVED 0.375 TOWARD CL TO ELIMINATE INTERFERENCE WITH AIRCRAFT MOUNTS. REFERENCE: PAR#08-21 AND ECR#1225 | MB                                                                                                                                                                                                                                                                                     | 08.07.24     |
| D          | ADD VIEW FOR OEM SKID HOLES, ROTATE ORIENTATION OF CLAMPS SECTION F-F, REMOVE -851 ABRASION STRIP, ADD MAGNOBOND 6398, ADD CUSHION                                                                                                    | PH                                                                                                                                                                                                                                                                                     | 07.02.07     |
| C          | ADD HOLES AND NUT PLATES FOR COMPATIBILITY WITH BHT/AA SKIDTUBES                                                                                                                                                                      | PH                                                                                                                                                                                                                                                                                     | 05.07.26     |
| B          | ADD CHAFING SHIELD                                                                                                                                                                                                                    | CP                                                                                                                                                                                                                                                                                     | 03.05.21     |
| A          | NEW ISSUE                                                                                                                                                                                                                             | CP                                                                                                                                                                                                                                                                                     | 02.05.13     |
| REV.       | DESCRIPTION                                                                                                                                                                                                                           | BY                                                                                                                                                                                                                                                                                     | DATE         |
| DESIGN     | <i>40</i>                                                                                                                                                                                                                             | <b>DART AEROSPACE LTD</b><br>HAWKESBURY, ONTARIO, CANADA                                                                                                                                                                                                                               |              |
| DRAWN      | RF                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                        |              |
| CHECKED    | <i>40</i>                                                                                                                                                                                                                             | DRAWING NO.                                                                                                                                                                                                                                                                            | REV. C       |
| MFG. APPR. | <i>40</i>                                                                                                                                                                                                                             | D407-667-245                                                                                                                                                                                                                                                                           | SHEET 1 OF 4 |
| APPROVED   | <i>40</i>                                                                                                                                                                                                                             | TITLE                                                                                                                                                                                                                                                                                  | SCALE        |
| DE APPR.   | <i>40</i>                                                                                                                                                                                                                             | CROSSTUBE ASS'Y (407 HIGH AFT)                                                                                                                                                                                                                                                         | NTS          |
| DATE       | 15.03.20                                                                                                                                                                                                                              | COPYRIGHT © 2002 BY DART AEROSPACE LTD<br><small>THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD</small> |              |

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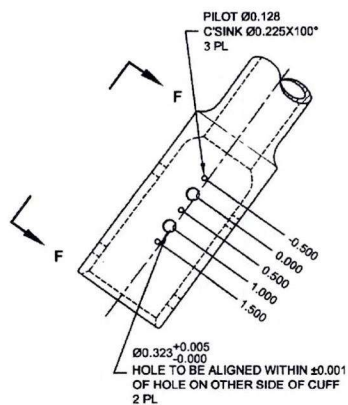


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2015 APR 09

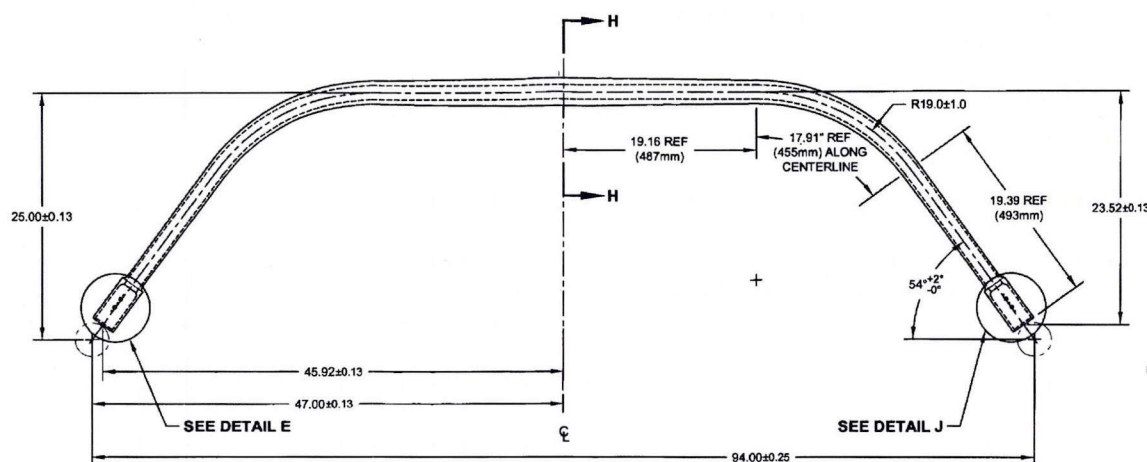
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| DESIGN                                                                                                                                                                                                               | 47       | <b>DART AEROSPACE LTD</b>              |              |
| DRAWN                                                                                                                                                                                                                | RF       | HAWKESBURY, ONTARIO, CANADA            |              |
| CHECKED                                                                                                                                                                                                              | 47       | DRAWING NO.                            | REV. C       |
| MFG. APPR.                                                                                                                                                                                                           | 47       | D407-667-245                           | SHEET 2 OF 4 |
| APPROVED                                                                                                                                                                                                             | 47       | TITLE                                  | SCALE        |
| DE APPR.                                                                                                                                                                                                             | 47       | CROSSTUBE ASS'Y (407 HIGH AFT)         | NTS          |
| DATE                                                                                                                                                                                                                 | 15.03.20 | COPYRIGHT © 2002 BY DART AEROSPACE LTD |              |
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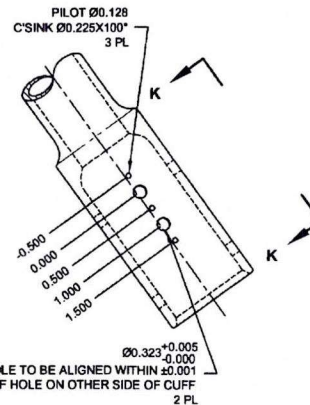
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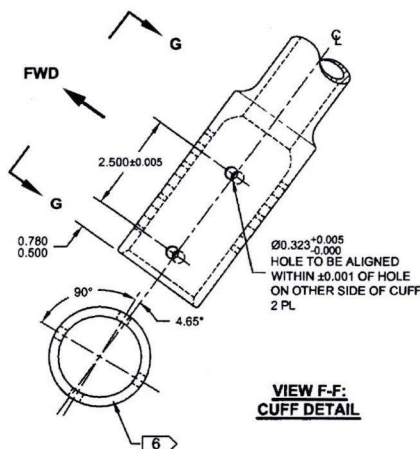
**DETAIL E**  
SCALE 4X  
(VIEW LOOKING FWD)



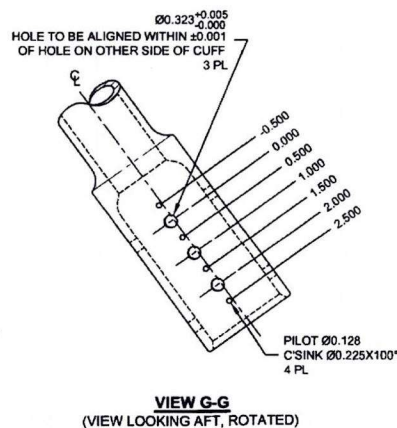
**D407-667-605**  
**BENDING AND DRILLING DETAIL**  
(VIEW LOOKING FWD)



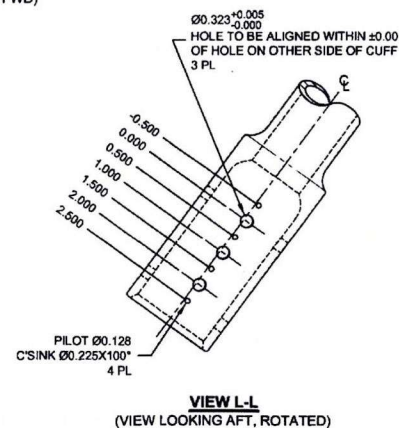
**DETAIL J**  
SCALE 4X  
(VIEW LOOKING FWD)



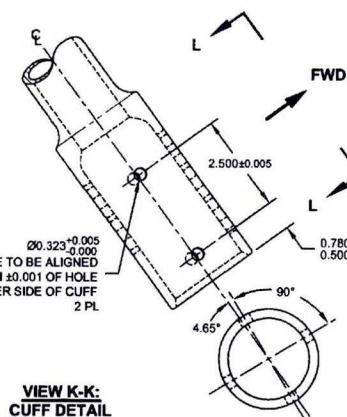
**VIEW F-F:**  
**CUFF DETAIL**



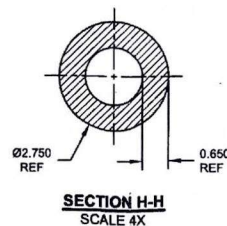
**VIEW G-G**  
(VIEW LOOKING AFT, ROTATED)



**VIEW L-L**  
(VIEW LOOKING AFT, ROTATED)



**VIEW K-K:**  
**CUFF DETAIL**



**SECTION H-H**  
SCALE 4X

**RELEASED**

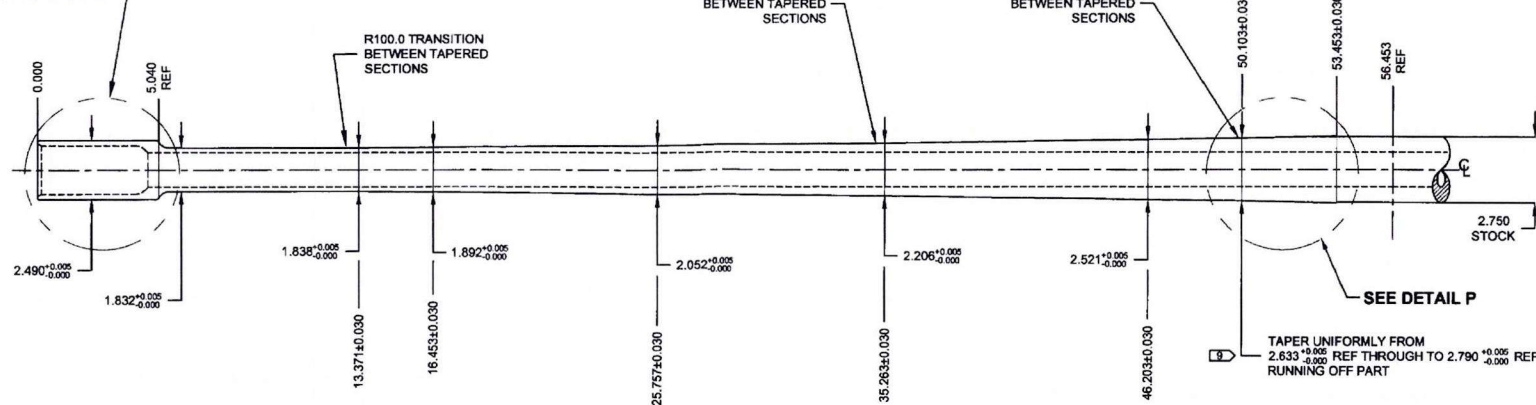
2015 APR 09

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| DESIGN     | 40       |
| DRAWN      | RF       |
| CHECKED    | 40       |
| MFG. APPR. | 40       |
| APPROVED   | 40       |
| DE APPR.   | 40       |
| DATE       | 15.03.20 |

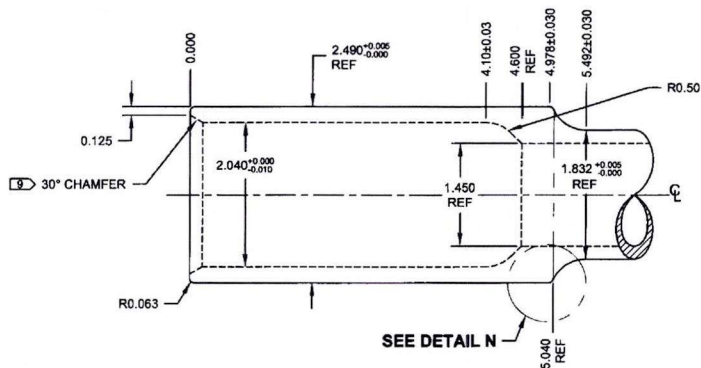
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| <b>DART AEROSPACE LTD</b><br>HAWKESBURY, ONTARIO, CANADA                                                                                                                                                                                                                 |              |
| DRAWING NO.                                                                                                                                                                                                                                                              | REV. G       |
| D407-667-245                                                                                                                                                                                                                                                             | SHEET 3 OF 4 |
| TITLE                                                                                                                                                                                                                                                                    | SCALE        |
| CROSSTUBE ASS'Y (407 HIGH AFT)                                                                                                                                                                                                                                           | NTS          |
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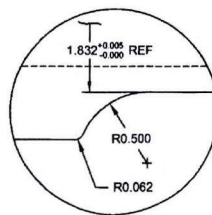
SEE DETAIL M



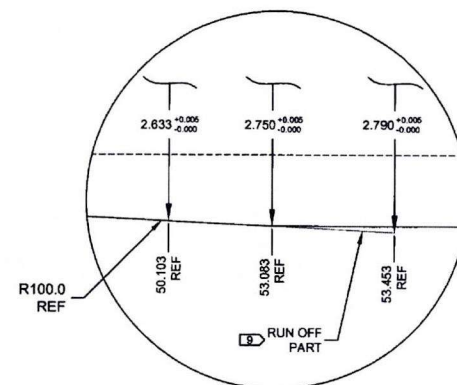
**D407-667-245 MACHINING DETAIL**



**DETAIL M: CROSSTUBE CUFF**  
SCALE 3X



**DETAIL N: CUFF TRANSITION**  
SCALE 2X



**DETAIL P: TAPER RUN-OFF**  
NOT TO SCALE

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2015 APR 09

|            |          |                                                                                                                                                                                                                                                                         |              |
|------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| DESIGN     | 47       | <b>DART AEROSPACE LTD</b><br>HAWKESBURY, ONTARIO, CANADA                                                                                                                                                                                                                |              |
| DRAWN      | RF       |                                                                                                                                                                                                                                                                         |              |
| CHECKED    | 47       | DRAWING NO.                                                                                                                                                                                                                                                             | REV. G       |
| MFG. APPR. | 47       | D407-667-245                                                                                                                                                                                                                                                            | SHEET 4 OF 4 |
| APPROVED   | 47       | TITLE                                                                                                                                                                                                                                                                   | SCALE        |
| DE APPR.   | 47       | CROSSTUBE ASS'Y (407 HIGH AFT)                                                                                                                                                                                                                                          | NTS          |
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Entered: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. \_\_\_\_\_

Route update only ☐

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                        |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------|--|
| Job: _____<br><br>Part No. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/> | <b>DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Cross tube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/> </div> <div>           Eng. (Non-AW) <input type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Water Jet <input type="checkbox"/><br/>           Supplier <input type="checkbox"/><br/>           Quality <input type="checkbox"/> </div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                        |  |
| Date : _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Sequence #: _____                                                                                                                 | QTY Affected : _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  | MRB (QSI042)           |  |
| Description Work Order Deviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                   | Disposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  | Completed By           |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | Lead hand / Supervisor |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                        |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | QC / QA Coordinator    |  |
| <b>Root Cause</b><br><br><div style="display: flex; flex-direction: column;"> <div>Operator <input type="checkbox"/></div> <div>Manufacturing Process <input type="checkbox"/></div> <div>Equip/Tooling <input type="checkbox"/></div> <div>Handling/Preservation <input type="checkbox"/></div> <div>Material <input type="checkbox"/></div> <div>Product Improvement <input type="checkbox"/></div> <div>Process Improvement <input type="checkbox"/></div> <div>Human Factors <input type="checkbox"/></div> </div> |                                                                                                                                   | <b>FAULT CATEGORY</b><br><br><div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> Pressure/Forced<br/> <input type="checkbox"/> Bending<br/> <input type="checkbox"/> Crushing<br/> <input type="checkbox"/> Cracks<br/> <input type="checkbox"/> Crimp/Kink/Ripple/Wave/Twist<br/> <input type="checkbox"/> Marks/Chatter<br/> <input type="checkbox"/> Mislabeled         </div> <div style="width: 50%;"> <input type="checkbox"/> Contamination<br/> <input type="checkbox"/> Misaligned/off center<br/> <input type="checkbox"/> BOM/Route<br/> <input type="checkbox"/> Broken/Damage/Defect<br/> <input type="checkbox"/> Incomplete/Unclear Instructions<br/> <input type="checkbox"/> Drill Holes<br/> <input type="checkbox"/> Fit/Function         </div> <div style="width: 50%;"> <input type="checkbox"/> Power Loss/Surge<br/> <input type="checkbox"/> Folio/Program<br/> <input type="checkbox"/> Grain Direction<br/> <input type="checkbox"/> Weld<br/> <input type="checkbox"/> Wrong Stock Pulled<br/> <input type="checkbox"/> Out of Sequence<br/> <input type="checkbox"/> Off-set/Set-up         </div> <div style="width: 50%;"> <input type="checkbox"/> Positioned Wrong<br/> <input type="checkbox"/> Outside Tolerance<br/> <input type="checkbox"/> Drawing<br/> <input type="checkbox"/> Finish<br/> <input type="checkbox"/> Part Lost/Missing<br/> <input type="checkbox"/> Misread         </div> </div> |  |                        |  |
| Other/Details:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                        |  |